CHAPTER

2

Shooting 8 mm arms

Shortly after the Mle. 1886 rifle was placed in service, competitions were organized by the Union des societes de tir of France, in cooperation with the military authorities. The Olympic Games of 1900 were held in Paris. The shooting events were held at the Satory military camp, close to Versailles; they gathered more than 6,000 competitors. The international competition is organized in conjunction with the 7th national competition: the goal is to judge the average performance of French shooters in comparison to those of other countries. We find among the participants Jean Justin Rene Thomas, born August 20, 1865 at Breux-sur-Avre (Eure department). Son of a banker, Rene Thomas practiced shooting from 1888. Licensed by the *La Seine* shooting society, he is in 1891 the premier champion of France with the Mle. 1886 rifle. He participated in shooting events at the 1900 Summer Olympics in Paris and won a bronze medal in the team rifle shooting event.

Photo

Shooting events at Satory during the 1900 Olympic Games (Jean Huon's archives).

But the French domination is not convincing in international events, the French shooters are dominated by the Swiss and Scandinavians. Several women participate in the national competition. The ranking of the 300 m service rifle event, from three positions, is as follows:

- Gold medal, Emil Kallenberger (Switzerland), with 930 points out of 1000;
- Silver medal: Anders Peter Nielsen (Denmark), with 921 points;
- Bronze medal: a tie: Ole Ostmo (Norway) and Paul Van Asbroek (Belgium), with 917 points.

However, the overall ranking places France at second place in the world, with ten medals thanks to the excellent results obtained by handgun shooters.

Research into precision

While competitions continued within the French shooting societies, we developed all new equipment destined to improve the performance of 8 mm service arms (during the era of the Lebel rifle and the Berthier carbine):

- Gallery cartridges developed mainly by the S.F.M. (see previous chapter), which we advise to use after being greased with sheep's foot oil; this ammunition gives, in general, better results than service cartridges;
- Reloading equipment;
- Devices intended to test the arms, in particular the device developed by H. Menissier (French shooting champion in 1902-1904.

Photos

Results of the tests performed with the Menissier shooting device (Luc Cavaletti's archives).

The Menissier shooting device. It is composed of a cast iron table on which is installed a device permitting the fixation and adjustment in two planes, either a rifle or a carbine; it is associated with a recoil-absorbing device which avoids any misalignment of the system between each shot. There also exist similar devices for handguns and reduced caliber carbines (Luc Cavaletti's archives).

Service weapon competitions were continued in a sustained manner until 1914. After the war, the practice of shooting resumed progressively, but without recovering the luster of years past.

The sinister law of decree of April 18, 1939 brought a fatal blow to the practice of shooting with service arms at it is not until recently that it could resume.

Photos

Two 100 m targets that had been shot at with a Lebel rifle placed on a Menissier device (Luc Cavaletti's archives)

At left with gallery cartridges, and at right with balle D cartridges.

Two 200 m targets shot under the same conditions (Luc Cavaletti's archives).

Deregulation

The decree-law of April 18, 1939 put in place draconian regulations intended to forbid – except for with express authorization – the possession of handguns and military rifles by individuals. These regulations continued until 2012 when a new law and its application decree of August 2, 2013 placed in category **D-2-e** (free acquisition and possession) the old repeating rifles designed before January 1, 1900. Therefore after 74 years of being "placed in the closet" (1939-2013), the Lebel finally becomes a collector's arm and, for the holders of a shooting license, a device that can be used in the context of recreational shooting and competition shooting in the TAR discipline (Tir aux Armes Reglementaires), held by the Federation francaise de tir since 2005.

The decree of September 2, 2013 places in the **C-1-b** category (arms subject to declaration) all the French rifles or musketoons using the Berthier system. Here too, shooters can practice firing, in the same conditions as those specified above.

But to be able to shoot, one still must have the cartridges. Before the decree of August 2, 2013, the owners of Lebel rifles and Berthier rifles and carbines, who wished to be able to shoot their weapons without having an authorization of the possession of an arm of the 1st category, had to use them after having converted them to arms of the 5th category by using *Wildcat* cartridges:

- In 7 mm Lebel, after changing the barrel;
- In 8 mm/.348, after reaming the chamber. Designated 8 mm Barrellier at the Clymer reamer manufacturer in the USA.

The utilization of the Berthier system rechambered for 8 mm/348 Winchester caliber ammunition necessitates, for the utilization of 5 shot clips in the M 16 rifles and musketoons, modifying the side walls of the receiver at the level of the feed lips, by machining to decrease the length of the latter at the rear so that the sleeve, which is now 7 mm longer, so that its neck can engage in the magazine without compromising feed in repeating fire. In either case, it is desirable to use 3 shot clips in the Mle. 16 magazine, the 5 shot clip can be inappropriate to use this ammunition as it can cause stoppages due to the excessive tapering in the amount used in loading the clip.

These devices, more bothersome to use and sometimes dangerous, were made obsolete and the shooter will be more interested in researching an arm in good condition in the original caliber. This is especially so as we begin to find on the marked ammunition and reloading elements in 8 mm Lebel.

Photos

Wildcat 7 mm Lebel cartridge (Copyright Jean Huon).

Another wildcat cartridge in 8 mm-.348 (Copyright Jean Huon).

1890 Cavalry carbine

1890 cuirassier's carbine

1892 artillery musketoon

1902 Indochinois rifle

1907 colonial rifle

07-15 rifle

1916 musketoon

1916 rifle

Turkish 07-15 M 48 rifle

Berthier 8 mm rifles and carbines (Copyright Jean Huon).

Mle. 1886 M 93 rifle

Mle. 1886 M 93 R 35 musketoon

Mle. 1874 M 80 M 14 rifle

Remington Mle. 1915 rifle

R.S.C. 1917

R.S.C. 1918 short rifle

MAS 47 rifle

Rival-Daudetau carbine

Other 8 mm Lebel arms (Copyright Jean Huon).

Modern 8 mm Lebel ammunition

Preliminary Note

The 8 mm Lebel cartridge, having a case length of 50.5 mm, is called 8 x 50 R by some and 8 x 51 R by others. We prefer the designation 8 x 51 R to avoid all confusion with the 8 x 50 R Mannlicher cartridge.

When we began to write our preceding work on the Lebel rifle, we discovered, with astonishment but not to say dismay, that the 8 mm Lebel cartridge was not CIP approved! The reason is surely due to the fact that this ammunition has been obsolete for decades and remained placed in the 1st category until the recent period, as a result of the application of fussy and unrealistic legislation. As a result, there were no, or almost no, manufacturers attempting to commercially sell this ammunition and thus approval was not necessary.

Interviewed by Jean Huon on August 28, 2014, the Banc d'epreuves de Saint-Etienne let him know that he could not test arms chambered in 8 mm Lebel because the ammunition was not CIP approved. They also let him know that approval of this caliber by the CIP was "in the pipes" and they also provided us:

- A drawing of the Mle. 1886 balle D cartridge;
- A drawing of the Mle. 1932 N cartridge;
- A drawing of a maximized cartridge and a minimized chamber, created in May 1977 by the German Triebel society, specializing in the manufacture of chamber reamers.

On February 18, 2015, the Banc d'epreuves communicated to us a first attempt at a drawing of the 8 mm Lebel cartridge created by the CIP's permanent office. We shared our observations with them. A project of a definitive drawing was submitted on March 27, 2015. This drawing conforms to that of the 8 mm Lebel balle D cartridge. It was presented May 19, 2015 in a technical commission and validated February 12, 2016.

Photos

Triebel drawing (Triebel).

CIP sheet concerning the 8 x 51 R Lebel cartridge (CIP document reproduced with the kind permission of the Banc d'epreuves de Saint-Etienne).

The fact that the majority of arms in 8 mm Lebel have been rechambered for the Mle. 1932 N cartridge is not an obstacle to the utilization of balle D pattern cartridges. This concerns most of the arms of the Lebel and Berthier systems and includes Mle. 1874-80 M 14 rebarreled Gras rifles, but not the single-shot Remington "Rolling Block" Mle. 1915. As a general rule, we can say that:

- An original Mle. 1932 N cartridge will not chamber in a non-rechambered rifle which is not marked N on the barrel. This is not of grave importance because the usage of period cartridges is banned for safety reasons (risk of hangfires and/or decomposition of pyrotechnic materials) and the possibility of accelerated oxidation (mercuric priming);
- The usage of recent commercial cartridges or a reloaded cartridge made with tools currently available, that is to say according to the profile of the Mle. 1886 balle D cartridge, in an arm rechambered for the profile of the N, will in consequence have a light swelling of the case neck, which may put a crack in it – if not after the first shot, then after reloading.

The safest solution seems to be exclusive use of reloaded cartridges, with an annealed neck (12 seconds on a gas flame) and then reapplying a mandrel.

Photo

Drawing of the chamber neck of arms rechambered for the Mle. 1932 N cartridge (Philippe Regenstreif's archives).

Commercial cartridges

Partizan

The Prvi Partizan cartridge factory located at Uzice in Serbia produces 8 mm Lebel cartridges loaded with a 200 grain jacketed bullet. These cartridges are of the Mle. 1886 D pattern and chamber in the barrel of the pressure test rifle of the Banc d'epreuve de Saint-Etienne. There is not an exclusive importer of this brand of cartridges in France, importation is done directly from the manufacturer or via Luxembourg or Germany. We might think that the Serbian cartridge factory kept both the tooling and the know-how to make French munitions (8 mm Lebel and 7.5 mm Mle. 1929 C) during an era where Yugoslavia, who claimed the status of a *non-aligned country*, gave provisions to the FLN in Algeria and the Viet-Cong in Southeast Asia!

Photos

Partizan case, bullet, and cartridge (Copyright Jean Huon).

Box of 8 mm Lebel Partizan cartridges (Copyright Jean Huon).

Components

There are diverse components on the market for reloading the 8 mm Lebel cartridge.

Cases

We can eventually use original cases, but, these have Berdan priming, causing difficulties in replacing the primer and requiring a special tool. If we can find original primed cases, we must know that these may age poorly and that the primers contain mercury which causes corrosion to the bore of barrels. These cases weigh around 12 g.

Horneber

There are Boxer cases on the market, notably made by the German armorer **Horneber** at Nuremberg since 2002. These are brass cases whose base is slightly different than that of the Lebel, these are probably cases made from blanks that also serve other calibers (11 mm Mauser, Express calibers, etc.). We have encountered two variants:

- Rimmed case with unmarked rim, the mass of the unprimed case is 12.726 g with an average deviation of 0.026 g (mean of fifteen cases);
- Rimmed case with listel, marked **HH 8 x 50 R LEBEL**, weight 13.29 g (only one example measured).

Bertram

The Australian **Bertram** Bullet Co Pty Ltd society, incorporated at Seymour (Victoria), makes cases for old cartridges, notably 8 mm Lebel cases. These contain a large listel and a marking (although quite difficult to read) where figure mentions of **8 x 50 R** at 12 o'clock, **LEBEL** at 6 o'clock and two stylized kangaroos (brand logo) at 3 and 9 o'clock. An empty unprimed case weighs 15.214 g with an average deviation of 0.148 g (mean of twenty cases).

Photos

Horneber cases (Copyright Jean Huon).

Rims of Horneber cases (Copyright Jean Huon).

Bertram case (Copyright Jean Huon).

Partizan

Partizan cases, made in Serbia by Prvi Partizan at Uzice, with a large listel, are marked **PPU 8 x 50 R LEBEL.** Weight 15.335 g with an average deviation of 0.081 g (mean of twenty cases).

Graf

Graf cases are in brass with flat rim and Boxer primer, they are sold by Graf & Sons in Mexico (Montana) in the United States. They are marked **GRAF 8 x 50 R LEBEL** and their mass is 15.216 g, with an average deviation of 0.098 g (mean of twenty cases).

Photos

Box of Bertram cases (Copyright Jean Huon).

Rim of a Bertram case (Copyright Jean Huon).

Rim of a Partizan case (Copyright Jean Huon).

Rim of a Graf case (Copyright Jean Huon).

Graf case (Copyright Jean Huon).

Adaptable cases

We can also use **.348 Winchester** cases reformed to the profile of the 8 mm Lebel. It is necessary to shorten the case down to a length of 50.5 mm, then one must heat the neck and the shoulder on a gas flame for 12 seconds to anneal the brass following reforming. These cases are particularly resistant and can be reloaded multiple times, which is not always the case for those of other brands. Their mass is 14.902 g (mean of ten cases).

Bullets

It is imperative to use bullets whose caliber is between 8.25 and 8.32 mm (.325 to .327).

Photos

Reformed .348 Win case, GPA bullet and loaded cartridge (Copyright Jean Huon).

Rim of a .348 Winchester case (Copyright Jean Huon).

The different types of 8 mm Lebel projectiles (Copyright Jean Huon).

Balle D

As a reminder, the characteristics of the **balle D** are:

Diameter:	8.32 mm above the crimp and 8.15 mm at the base
Length:	39.20 mm
Mass:	12.8 g

The center of gravity is situated 15.59 mm from the base. The case of the 8 mm balle D cartridge presents a maximum and constant diameter of 8.85 mm from the crimp to the base of the neck;

Photos

Balle D (Copyright Jean Huon).

Diameters of the balle D (Pierre Colline).

Center of gravity of the balle D (Pierre Colline).

Balle 1932 N

And those of the balle **Mle. 1932 N:**

Diameter:	Above the crimp between 8.22 and 8.27 mn below the crimp its diameter is higher (8.27 to 8.32 mm)
Length:	39.75 mm
Mass:	14.90 to 15.30 g

The center of gravity is located 16.66 mm from the base. The case neck possesses a maximum diameter at the crimp of 9.02 mm and 9.14 at the base of the neck.

American bullets

Some major reloading component brands only have bullets whose nominal diameter is .323, this is perfectly convenient for shooting the Mauser, but not for the Lebel:

- Sierra .323 bullets of 175 or 200 grains;
- Hornady .323 bullets of 185 or 196 grains (the later of a bi-ogival profile which resembles the balle D in its profiles but not its dimensions);
- Remington .323 bullets of 185 grains.

Photos

Balle mle. 1932 N (Copyright Jean Huon).

Center of gravity of the balle mle. 1932 N (Pierre Colline).

Use of these sub-caliber projectiles is not recommended, because they result in a loss of power, a rapid erosion of the barrel and are harmful to precision. We must therefore formally advise against their use.

Let us remember that in service a barrel would be discarded at 8.20 mm, it is therefore fallacious to hope for the slightest accuracy with ammunition below this measure.

Partizan bullets

The PPU society offers pointed bi-ogival bullets with lead core and jacketed in tombac with crimping groove, whose characteristics are the following:

Diameter:	8.30 mm (.327)
Length:	33.74 mm with a mean deviation of 0.156 mm (mean of 20 projectiles)
Mass:	12.976 g, with a maximum deviation of 0.17 g over 500 projectiles

The center of gravity is located 13.83 mm from the base. They are packaged by the 500 in a transparent plastic sack, without indication of their nature, origin, dimensions or weight.

Photos:

American cartridge loaded with a semi-jacketed bullet with .323 diameter (Copyright Jean Huon).

Partizan bullet (Copyright Jean Huon).

Center of gravity of the .327 Partizan bullet (Pierre Colline).

Cartouches Sologne bullets

Under the proposition of Jean Huon, Mr. Thibault Vuillemey, director of the Cartouches Sologne society at Lamotte-Beuvron (41), a French manufacturer of GPA-type low-cut projectiles, again placed in manufacture the balle D. To this effect, we communicated to them:

- A sample of the balle D;
- A drawing of the projectile.

They are machined on an automatic lathe from a bar of CuZn37Pb3 brass, the chemical composition of this alloy is:

- Copper: 58.20%
- Zinc: 37.37%
- Lead: 3.25%
- Impurities and variations: 1.18%

They present the following characteristics:

Diameter:	8.31 mm (.327)
Length:	39.33 mm, with a mean deviation of 0.017 mm (mean of 20 projectiles)
Average mass:	12.403 g (194 grains), with a mean deviation of 0.008 g (mean of 20 projectiles)

The center of gravity is located 15.68 mm from the base. These are projectiles that are perfectly regulated and whose characteristics are almost identical to those of the original balle D. After firing multiple of these monolithic projectiles, we could not find any buildup of alloy in the rifling.

Photos

Unlabeled packet of 500 Partizan bullets (Copyright Jean Huon).

Some comparative tests of hardness were done in the laboratory. These experiments were performed using the Vickers method. We use a diamond penetrator in a square-based pyramidal form with a summit angle of 136 degrees to which is applied a certain charge F on the surface of the sample for a certain time. We then measure the lengths *d1* and *d2* of two diagonals of the imprint (square) aided by a magnifying optic system (see figures 1 and 2). The Vickers *HV* hardness is therefore given by the following relation: $HV = 0.189\ F/d$, where *F* is the charge

applied (N) and *d* is the mean of the diagonals of the imprint (mm). Three experiments were done an a period balle D (VIS 4-08) and on a GPA bullet. The mean of the results obtained give:

- For the period balle D: HV1 = 99;
- For the GPA bullet: HV2 = 179 HV according to our experiment and between 178 and 184 HV for those of the manufacturer. The Brinnel hardness (HB) is equivalent.

The modern bullet is significantly harder than the period bullet.

Photos

Balle D made by Cartouches Sologne (Copyright Jean Huon).

Box of new Balle D (Copyright Jean Huon).

Center of gravity of the new balle D (Pierre Colline).

Diameters of the new manufacture balle D (Pierre Colline).

Manufacture of the new balle D on an automatic lathe (Cartouches Sologne).

Illustration of a Vickers hardness experiment (Pierre Laurent).

Square imprint left in the material during a Vickers hardness experiment (Pierre Laurent).

TPM 327 D bullets

After two years of research, an 8 mm projectile usable in arms chambered in 8 mm Lebel was developed by the Etablissements Plubeau Decolletage at Auxelles-Bas (90). It entered the finalization phase in autumn 2015. The information that we are concerned with was communicated by Mr. Olivier Lacreuse, director, and Mr. Patrick Lacour, who participated in the research. He let us know that the first trials were being done with a .308 bullet with a profile transposed from that of the balle D, which permitted proceeding with preliminary experiments with fire done with a Schmidt-Rubin K 31 carbine. Certain parameters were able to be mastered, notably the behavior of monobloc projectiles and taking up in the rifling, the trials could be pursued with 8 mm bullets with a drawing close to that of the balle D. After diverse experimentation, the mass of the retained projectile is 189 grains. It is made in CuZn35Pb2 brass in bars shaped in turning machines.

Diameter:	8.315 mm (.327)
Length:	39.3 mm
Average mass (given by the manufacturer):	12.10 g (189 grains), measured from five examples: 12.269 g
Hardness:	Between 370 and 390 N/mm^2

Reloading trials were done by Mr. Lacour, with Partizan cases and a charge of 2.50 to 2.55 g of Tubal 3000 powder, which allowed him to obtain:

- A V0 of 796 to 704 m/s from the barrel of a Mle. 07-15 M 16 rifle;
- A V0 of 633 to 641 m/s from an Mle. 1916 musketoon.

Precision tests had not yet been done at the time that this information was communicated to us. Upon examining the specimens, we can find that the line of the ogive is slightly different from that of the original balle D and that the crimping groove is less pronounced. The center of gravity is found 15.50 mm from the base.

Photo

The TPM 327 D bullet (Copyright Jean Huon).

Some prices

8 mm Lebel Partizan cartridges = around 22 euros for a box of 20
Unprimed 8 mm Lebel Partizan case = around 0.70 euro
8 mm Lebel Partizan bullet = 0.30 to 0.45 euro
Cartouches Sologne balle D = around 0.75 euro
TPM 327 D bullet = around 0.50 euro

Powders

Research has consisted of finding a powder whose characteristics were as close as possible to the original loadings, developing the necessary energy for the propulsion of the projectile at a velocity close to 700 m/s; all remain in the same limits of pressure, energy and volume available in the case.

Reloading

Our late friend Rene Malfatti recommended, for the 8 x 51 R Lebel caliber, a charge of 2.80 to 2.95 g of Tubal 5000 powder, for reloading a cartridge to which would be mounted an Mle. 1932 N bullet weighing 15 g.

Following more recent trials, a shooter specializing in reloading communicated to us the result of his trials for three types of bullets with different structures and masses as well as for the powders, primers and cases in this caliber. The goal to be attained was to be able to reproduce “historic fire” or at least get as close as possible to it via the intermediary of reloading elements actually available in armories, with the combinations of loading components most faithful to the two types of period cartridges using an ordinary bullet, the type D or the 1932 N. It was also necessary to reproduce the trajectories of these bullets in accordance to the values graduates on the rear sights to the corresponding ranges. However, the distances available at ranges do not exceed 200 or 300 m, therefore long distance tests cannot be performed. The loading combinations experimented with, having their results featured below, were sufficient for this shooting. He also did not do research into results exceeding period values, so as to remain safe in using and preserving these historic objects belonging to French armament heritage. Our duty is to be able to transmit to future generations. The trials were done with brass cases with diverse origins, including .348 Winchester cases placed into form using a 8 x 51 mm R Lebel tool. Then, the necks were uniformly cut with a *case trimmer* to 50.50 mm following commonly described procedures in reloading manuals. The primers used were of the Boxer ∅ 5.33 mm Large Rifle Remington No. 9 ½ or else CCI 200 LR. The total length of the cartridge will be 74.10 mm. Crimping done with Lee Factory Crimp 8 x 51 R. The powder charge is measured to 98% with a volumetric dosimeter, the final result was adjusted for the remaining 2% with a 1/100 precision balance.

The measured velocities were taken by a Magnetospeed chronograph adjusted according to the nature of the bullets fired and positioned 17 cm from the muzzle of the arm, which practically corresponds to the V0. The arm used for the trial is an Mle. 1907-15 rifle made by the Manufacture Nationale d’Armes de Saint-Etienne, equipped with a MAS 1915 barrel. The bore is drawn to the dimensions of the new measurements at the height of the lands, over the entirety of the rifled section. The chamber is modified to fire the balle Mle. 1932 N as can be seen by the N marking on the rear of the barrel. The chamber, as for it, in in a good state but not new with very faint engravings that become apparent on the relief of fired cases of cartridges with significant loadings. Could these markings in the chamber can be left by one or more shots where the case body was soiled by dirt? We can think of the land of trenches!

Old cartridges (for comparison)

S.F.M. cartridges with Mle. 1932 N bullets also by S.F.M., mass of 14.93 g, diameter .326 or 8.28 mm. S.F.M. primers of 6.35 mm with charge of 3.7 cg of mercury fulminant between other components. Brass Mle. 1886 N cases. BFP 1 powder in square sequins with a graphite appearance, shiny anthracite gray, made by the Pont-de-Buis powder factory (1949 lot), charge 2.99 g.

Photos

Some trials with loading (Pierre Colline).

Mle. 1932 N cartridge.

BFP 1 powder.

S.F.M. case

These cartridges do not chamber in the pressure barrel of the Banc d'epreuves de Saint-Etienne.

Powder	Mass	V0 Shot 1	V0 Shot 2	V0 Shot 3	V0 Shot 4	V0 Shot 5
BFP 1	2.99 g	693 m/s	689 m/s	698 m/s	693 m/s	692 m/s

Analysis of the results:

- V0 max = 698 m/s
- V0 min = 689 m/s
- V0 average = 693 m/s

The last velocity obtained of 692 m/s had a hangfire of at least one quarter of a second.

Conclusion

It is completely recommended against firing these cartridges, for the following reasons:

- Aging and instability of their pyrotechnic components;
- Presence of mercury in the priming compound.

Load with 12.8 gram PARTIZAN reference B417 bullets (198 grains). Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ø .327" or ø 8.30 mm

.348 Winchester casing converted to 8 x 51 mm R Lebel. Bullets weighed to 1/100 of a gram and selected in lots, being 12.88 grams uniformly. Between 1970 and 1990, certain reloaders recall the excellent powder sold commercially by the SNPE then, later, by Nobel Sport, in the Vectan line, the famous Tubal 4 for long arms. This allows reloading most of our cartridges to medium power. Having been able to recently find by chance, via a veteran shooter and conservator, a new cylinder of 250 grams of Tubal 4 which is today a collector's object, curiosity got the better of the spirit of conservation and we reloaded the 8 x 51 mm R Lebel cartridge with this mythical powder which may have been forgotten by the young because, at the time, if the powder was common, as for the arms of this caliber,

Photos

Partizan bullet.

Tubal 4 powder.

Converted .348 Win case.

They were practically impossible to find on shooting ranges (military arms of the 1st category). Reloading tables of this ammunition with this powder and others were completely unavailable, or in any case not printed in the specialized press. This powder is presented in the form of small hepta cylinders in anthracite gray, measuring 1.6 mm in diameter and 1.5 to 1.7 mm in length.

Powder	Mass	V0 Shot 1
Old Tubal 4	2.40 g	608 m/s
Old Tubal 4	2.45 g	659 m/s
Old Tubal 4	2.50 g	612 m/s
Old Tubal 4	2.55 g	629 m/s
Old Tubal 4	2.60 g	643 m/s
Old Tubal 4	2.65 g	666 m/s
Old Tubal 4	2.70 g	676 m/s
Old Tubal 4	2.75 g	680 m/s

Old Tubal 4	2.80 g	689 m/s
Old Tubal 4	2.85 g	705 m/s

Observations

The charges from 2.40 to 2.55 g are soft but have nonetheless gained potential in the deflagration regime. With the charges from 2.60 to 2.70 g, they seem more vigorous but still acceptable, they could have satisfied accuracy at distances of 100 m and beyond! With the charges from 2.75 to 2.85 g, the recoil of the 07-15 was quite comfortable even as the desired velocity of 705 m/s was attained.

Conclusion

Today, if the old Vectan Tubal 4 powder still existed at Nobel Sport, it would probably be favored with a charge of 2.85 g.

Loading with PARTIZAN reference B417 12.8 gram (198 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ø .327” or ø 8.30 mm

Partizan bullet.

Tubal 5 powder.

Converted .348 Win case.

.348 Winchester cases converted to 8 x 51 mm R Lebel. Old Tubal 5 powder. Powder with heptaperforated cylindrical grains of the same shape as Tubal 4, but slightly larger (Ø 1.75 mm) and slightly darkened.

Powder	**Mass**	**V0 Shot 1**	**V0 Shot 2**	**V0 Shot 3**
Old Tubal 5	2.45 g	551 m/s	547 m/s	540 m/s

Too low in the deflagration regime. For the record, we will now include a comparison between the old Tubal 5 which has not been marketed for years and the current production Tubal 5000.

Loading with PARTIZAN reference B417 12.8 gram (198 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ø .327” or ø 8.30 mm

Partizan bullet.

Tubal 3000 powder.

Converted .348 Win case.

.348 Winchester casings converted to 8 x 51 mm R Lebel. Tubal 3000 powder. Tubular powder, with monoperforated cylinders in an anthracite gray shade, measuring 0.85 mm in diameter and around 1.2 to 1.6 mm in length.

Powder	**Mass**	**V0 Shot 1**	**V0 Shot 2**	**V0 Shot 3**	**V0 Shot 4**
Tubal 3000	2.55 g	653 m/s	659 m/s	655 m/s	664 m/s
Tubal 3000	2.60 g	676 m/s	688 m/s	683 m/s	682 m/s
Tubal 3000	2.65 g	698 m/s	686 m/s	693 m/s	695 m/s
Tubal 3000	2.70 g	708 m/s	704 m/s	708 m/s	701 m/s

Observations

The four charges of Tubal 3000 from 2.55 to 2.65 g have a deflagration potential accomplished in these loading combinations. The charge of 2.70 g of Tubal 3000 was practically the maximum.

Conclusion

With the 2.55 g charge, Tubal 3000 permits good groups at 100/200 m or more!

With the 2.60 or 2.65 g charge, Tubal 3000 permits good results at 200/300 m or more!

With the maximum charge of 2.70 g of Tubal 3000 in the Berthier Mle. 07-15 rifle, we attain a similar velocity and by consequence similar ballistics to those of the balle D, allowing excellent groups at 200/300 m and more.

Another shooter and confirmed specialist, having mastered reloading of the 8 x 51 R Lebel cartridge many years ago, reports having obtained to this day the best groups on target at distances of 200 to 300 m with Partizan reference B096 bullets in 8 mm FMJBT in Ø .323" or Ø 8.22 mm of 12.95 g with a charge of 2.78 g or 43 grains of Tubal 3000 and this is in a Lebel Mle. 1886 M93 infantry rifle in new condition, with a new barrel and chamber. In effect, the maximum charges would therefore present no difficulty in a new chamber or in good condition, but for a chamber that is a little "burnt out" that has been used, remnants of cases in the chamber can be felt and this happened twice in four cartridges with the 2.70 g charge of Tubal 3000 in this exact Berthier 1907-15! We can only note once more that the extra 0.08 g of Tubal 3000, primers, crimps, cases, different chamber conditions from one arm to another, exterior temperatures and many other parameters can change results from best to worst. So be careful!

Loading with PARTIZAN reference B417 12.8 gram (198 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) Ø .327" or Ø 8.30 mm

Partizan bullet.

Tubal 5000 powder.

Converted .348 Win case.

.348 Winchester cases converted to 8 x 51 mm R Lebel. Nobel Sport Tubal 5000 powder. Tubular powder, monoperforated cylinders with a dark gray shaded gloss, they measure 0.82 mm in diameter and around 1.6 mm long.

Powder	Mass	V0 Shot 1	V0 Shot 2	V0 Shot 3	V0 Shot 4	V0 Shot 5
Tubal 5000	2.50 g	653 m/s	605 m/s	590 m/s		
Tubal 5000	2.55 g	676 m/s	594 m/s	588 m/s		
Tubal 5000	2.60 g	698 m/s	610 m/s	611 m/s		
Tubal 5000	2.65 g	708 m/s	612 m/s	612 m/s		
Tubal 5000	2.70 g	653 m/s	626 m/s	623 m/s		
Tubal 5000	2.75 g	676 m/s	624 m/s	641 m/s		
Tubal 5000	2.80 g	698 m/s	642 m/s	645 m/s		
Tubal 5000	2.85 g	708 m/s	663 m/s	671 m/s		
Tubal 5000	2.90 g	676 m/s	682 m/s	682 m/s		
Tubal 5000	2.95 g	698 m/s	693 m/s	697 m/s	696 m/s	705 m/s
Tubal 5000	3.00 g	709 m/s	703 m/s	709 m/s	704 m/s	711 m/s

Observations

The deflagration regime was set too low for charges from 2.50 g to 2.60 g of Tubal 5000. Charges are soft from 2.65 g to 2.70 g of Tubal 5000. Good deflagration regime from 2.75 g to 2.85 g of Tubal 5000. Full pyrotechnic potential for 2.90 g to 2.95 g of Tubal 5000. At 3.00 g of Tubal 5000 is the maximum admissible.

Conclusion

The soft charges of 2.65 to 2.70 g of Tubal 5000 permits making boxes at short distances of 50 m and more to 100 m with good groups without testing the arm too much.

With the soft charges of 2.75 to 2.85 go of Tubal 5000, we can create boxes at greater distances to 200 m with good groups in the same conditions.

With the 2.90 and 2.95 g charges of Tubal 5000, we locate the period velocities with an 80 cm long barrel. The maximum charges of 2.95 and 3.00 g of Tubal 5000 permit obtention during fire of serious groups at long distances (greater than 300 m) and have ballistics similar to the balle D, created by Desaleux in 1898.

The shooter needs to take all precautions and notably avoid exposing the cartridges to direct sunlight or excessive temperatures, especially with the maximum loadings. With a weapon with a shorter barrel, a powder whose vivacity is called “rising” or more vivacious than the Tubal 5000 will be researched with the appropriate charges.

Loading with PARTIZAN 12.8 gram (198 grain) reference B417 bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ø .327” or ø 8.30 mm

Partizan bullet.

Vihtavuory N 140 powder.

Converted .348 Win case

.348 Winchester cases converted to 8 x 51 mm R Lebel. Vihtavuory N 140 powder. Cylindrical grains in anthracite gray hue, they measure around 0.9 mm in diameter and around 1 to 1.4 mm in length.

Powder	Mass	V0 Shot 1	V0 Shot 2
Vihtavuory N 140	2.30 g	528 m/s	543 m/s
Vihtavuory N 140	2.35 g	540 m/s	549 m/s
Vihtavuory N 140	2.40 g	567 m/s	555 m/s
Vihtavuory N 140	2.45 g	551 m/s	566 m/s
Vihtavuory N 140	2.50 g	556 m/s	587 m/s
Vihtavuory N 140	2.55 g	615 m/s	596 m/s
Vihtavuory N 140	2.60 g	597 m/s	602 m/s
Vihtavuory N 140	2.65 g	596 m/s	607 m/s
Vihtavuory N 140	2.70 g	624 m/s	630 m/s
Vihtavuory N 140	2.75 g	651 m/s	648 m/s
Vihtavuory N 140	2.80 g	653 m/s	651 m/s
Vihtavuory N 140	2.85 g	669 m/s	667 m/s

Observations

The two charges of N140 at 2.30 g and 2.35 g have a deflagration potential not accomplished in these combinations of loading. The three charges from 2.45 g to 2.55 g of N140 have an improved deflagration potential but still unsatisfactory. The four charges from 2.60 g to 2.75 g of N140 have achieved a good deflagration potential but do not give proportionally expected velocities. The two charges of 2.80 g of N140 reveal an existing recoil but do not always give the expected velocities. The two charges of 2.85 go of N140 reveal an existing maximum felt recoil, but do not always give the velocities initially hoped for, that is to say at least 690 m/s - 700 m/s?

Conclusion

Load incompatible with this type of projectile in view of obtaining the expected velocities.

Loading with PARTIZAN 12.8 gram (198 grain) reference B417 bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ø .327” or ø 8.30 mm

Partizan bullet.

Vihtavuory N 150 powder.

Converted .348 Win case.

.348 Winchester cases converted to 8 x 51 mm R Lebel. Vihtavuory N 150 powder. Cylindrical grains in anthracite gray tint, they measure about 1 mm in diameter and around 1.2 to 1.6 mm in length.

Powder	Mass	V0 Shot 1	V0 Shot 2	V0 Shot 3	V0 Shot 4	V0 Shot 5

Vihtavuory N150	2.80 g	642 m/s	641 m/s			
Vihtavuory N150	2.85 g	658 m/s	661 m/s			
Vihtavuory N150	2.90 g	667 m/s	671 m/s			
Vihtavuory N150	2.95 g	682 m/s	692 m/s			
Vihtavuory N150	3.00 g	709 m/s	712 m/s	702 m/s	702 m/s	711 m/s

Observations

With the 2.80 g charge of N150 the deflagration regime is attained. With the charges from 2.85 g to 2.95 g of N150, the full potential of the deflagration regime is attained. With the 3.00 g charges of N150, the full potential of the deflagration regime is maximized.

Conclusion

With the 2.80 g charge of N150, the load is soft to the shoulder and the arm is not tested. The charges from 2.85 g to 2.95 g of N150 allow creation of good groups at 200 m distance, if not more! With the 3.00 g charge of N150, undeniably, we arrive at a load just like the Nobel Sport Tubal 5000, with similar results, in terms of relative vivacity in conjugation with the exceptional length of the 80 cm barrel!

This 3.00 g charge of N150 permits consideration of fire at medium and long distances and to profit from maximization of exploitation of the graduated increments on the rear sight at the researched distances.

Loading with PARTIZAN 12.8 gram (198 grain) reference B417 bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ø .327” or ø 8.30 mm

Partizan bullet.

Nitrochimie RS 50 powder.

Converted .348 Win case

.348 Winchester cases converted to 8 x 51 mm R Lebel. Nitrochimie RS 50 powder. Cylindrical grains in a medium gray tint, they measure 0.80 mm in diameter and around 0.8 to 1.4 mm long.

Powder	**Mass**	**V0 Shot 1**	**V0 Shot 2**
Nitrochimie RS 50	2.30 g	527 m/s	480 m/s
Nitrochimie RS 50	2.35 g	534 m/s	541 m/s
Nitrochimie RS 50	2.40 g	491 m/s	529 m/s
Nitrochimie RS 50	2.45 g	531 m/s	562 m/s
Nitrochimie RS 50	2.50 g	564 m/s	507 m/s
Nitrochimie RS 50	2.55 g	592 m/s	584 m/s
Nitrochimie RS 50	2.60 g	609 m/s	585 m/s
Nitrochimie RS 50	2.65 g	602 m/s	606 m/s
Nitrochimie RS 50	2.70 g	609 m/s	618 m/s
Nitrochimie RS 50	2.75 g	626 m/s	608 m/s
Nitrochimie RS 50	2.80 g	612 m/s	630 m/s

Observations

The three charges of RS 50 from 2.30 g to 2.40 g have a deflagration potential not achieved in these load combinations. The three charges of 2.45 g to 2.55 g of RS 50 have an improved deflagration potential but still

unsatisfactory. The three charges from 2.60 g to 2.70 g of RS 50 have achieved a deflagration potential but do not give the expected velocities. The 2.75 g charge of RS 50 generates a more important recoil impulse but still does not give the expected velocity. The two charges of 2.80 g of RS 50 generates a strong recoil while still falling well short of the hoped for velocities, that is to say at least 690 – 700 m/s.

Conclusion

As with the Vihtavuory N140, the Nitrochimie RS 50 in correlation with the Partizan Ø .327" of 12.8 g with lead core and tombac jacket does not give convincing results.

Loadings with PARTIZAN 12.9 gram (199 grain) reference B097 bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) Ø .323" - Ø 8.22 mm.

Partizan bullet.

Vihtavuory N 150 powder.

Converted .348 Win case.

Bullets weighed to 1/100 of a gram and selected in uniform lots of 12.96 grams. It is slightly different from the B417 bullet, its diameter is 8.22 mm instead of 8.30 mm. .348 Winchester cases converted to 8 x 51 mm R Lebel. Vihtavuory N150 powder.

Powder	Mass	V0 Shot 1	V0 Shot 2	V0 Shot 3	V0 Shot 4	V0 Shot 5
Vihtavuory N150	3.00 g	700 m/s	693 m/s	697 m/s	704 m/s	696 m/s

Even though these B096 reference bullets having a Ø .323" have a similar profile to the B417 reference Ø .327" normally used in the barrel of Lebel arms, the B096 reference bullets are not appropriate. Their usage is possible but not recommended, in order to preserve the bores of the barrel from untimely erosion.

Mle. 1932 N bullets of 14.9 grams (230 grain). Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) Ø .326" - Ø 8.28 mm

Mle. 1932 N bullet.

Vihtavuory N 150 powder.

Converted .348 Win case.

Projectile with lead core and soft steel jacket plated in cupronickel. Mass 14.9 g / 230 grains. ⌀ .326" - ⌀ 8.28 mm. These projectiles are no longer available and were recovered from a lot of disassembled cartridges dating to 1948. Brass .348 Winchester case, Winchester brand, reformed to 8 x 51 mm R Lebel cut to 50.50 mm at the shoulder level, CCI 200 Large Rifle primer. Nitrochimie RS 62 powder. Shiny cylindrical anthracite gray grains, diameter around 0.9 mm, length around 1.6 to 2.7 mm.

Powder	Mass	V0 Shot 1	V0 Shot 2	V0 Shot 3	V0 Shot 4	V0 Shot 5
Nitrochimie RS 62	3.15 g	630 m/s	621 m/s	607 m/s	638 m/s	645 m/s

Observations

Deflagration regime attained, the velocities obtained are too low. The cartridge does not chamber in the pressure test barrel at the Banc d'epreuves de Saint-Etienne.

Conclusion

Look for a powder of more immediately increasing vivacity (more vivacious) than that of the Nitrochimie RS 62.

Mle. 1932 N 14.9 gram (230 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .326” - ⌀ 8.28 mm

Mle. 1932 N bullet.

Vihtavuory N150 powder.

Converted .348 Win case

Projectile and case similar to the preceding. Nitrochimie RS 60 powder, whose grains have a similar appearance to those of the RS 62.

Powder	Mass	V0 Shot 1	V0 Shot 2	V0 Shot 3	V0 Shot 4	V0 Shot 5
Nitrochimie RS 60	2.70 g	545 m/s	557 m/s	553 m/s	547 m/s	552 m/s
Nitrochimie RS 60	2.75 g	565 m/s	569 m/s	560 m/s	568 m/s	
Nitrochimie RS 60	2.85 g	593 m/s	588 m/s	292 m/s	602 m/s	586 m/s
Nitrochimie RS 60	2.90 g	590 m/s	618 m/s	606 m/s	601 m/s	616 m/s
Nitrochimie RS 60	2.95 g	603 m/s	605 m/s	621 m/s	624 m/s	621 m/s
Nitrochimie RS 60	3.00 g	636 m/s	632 m/s	644 m/s	633 m/s	632 m/s
Nitrochimie RS 60	3.05 g	651 m/s	656 m/s	649 m/s	660 m/s	652 m/s
Nitrochimie RS 60	3.10 g	673 m/s	647 m/s	669 m/s	662 m/s	673 m/s
Nitrochimie RS 60	3.15 g	683 m/s	681 m/s	687 m/s	693 m/s	684 m/s
Nitrochimie RS 60	3.20 g	705 m/s	701 m/s	700 m/s	693 m/s	698 m/s

Observations

We find that the charges from 2.70 g to 2.95 g of RS 60 generate velocities that are too low its standard deviations too large on the order of 4 to 10 m/s. From the charge of 3.15 g of RS 60, this standard deviation descends to 3 m/s, which is quite acceptable for a non-negligeable gain in velocity. With a charge of 3.20 g of RS 60, still at a standard deviation of 3 m/s which approaches the sought after 705 m/s with an apparently acceptable pressure, but with a more violent recoil. We are at the maximum charge! The cartridge does not chamber in the pressure test barrel at the Banc d’epreuves de Saint-Etienne.

Conclusion

There is no doubt that the goal has been attained and that probably in this rifle, precisely a charge of 3.17 g / 3.18 g of RS 60 permits replication of the velocities of the 1948 lot charged in the past with 2.99 g of BFP1 sequin powder.

Mle. 1932 N 14.9 gram (230 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .326” - ⌀ 8.28 mm

Mle. 1932 N bullet.

Vihtavuory N 550 powder.

Converted .348 Win case.

Projectile and case similar to the preceding. Vihtavuory N 550 powder, with small shiny cylindrical anthracite gray grains, diameter around 0.9 mm, length around 0.9 mm.

Powder	Mass	V0 Shot 1	V0 Shot 2
Vihtavuory N 550	2.75 g	588 m/s	596 m/s
Vihtavuory N 550	2.80 g	593 m/s	595 m/s
Vihtavuory N 550	2.85 g	621 m/s	618 m/s
Vihtavuory N 550	2.90 g	632 m/s	635 m/s
Vihtavuory N 550	2.95 g	646 m/s	649 m/s
Vihtavuory N 550	3.00 g	663 m/s	663 m/s
Vihtavuory N 550	3.05 g	678 m/s	683 m/s
Vihtavuory N 550	3.10 g	698 m/s	699 m/s
Vihtavuory N 550	3.15 g	706 m/s	707 m/s

Observations

The charges from 2.75 g to 2.85 g have a low deflagration regime. The charges from 2.90 g to 3.00 g have a correct deflagration regime. At the 3.05 g charge of N 550, all the power is encountered that is necessary to shoot at long distances of 300 m and more! The 3.10 g charge of N 550 seems to be the most suitable. At the 3.15 g charge of N 550, we attain the limits which must not be exceeded! The cartridge does not chamber in the pressure test barrel at the Banc d'epreuves de Saint-Etienne.

Conclusion

In loading with "heavy" bullet of 15 g, the Nitrochimie RS 60 at 3.18 g and Vihtavuory N 550 at 3.10 grams powders are the most appropriate for duplicating the velocities and therefore trajectories of the Mle. 1932 N bullet, with a preference for the loading combination at 3.10 g of N 550. We stress that these last shots were done in winter with an exterior temperature of 8 degrees C. These loads, fired at 25 degrees C or more if the cartridges were "baked"or used at ambient temperatures under a hot summer sun, generating more important pressures. May we wonder about the utility of having tested reloading cartridges with projectiles that have become unavailable? This is just because it was still possible to use a small lot today, this will undoubtedly not be possible in 15 to 20 years, and we wanted to have had the experience. It was also to demonstrate how the charges tested performed with a 15 gram bullet. This experimentation can prove useful if one day a factory makes new Mle. 1932 N bullets of 15 grams or cylindro-ogival bullets of the same mass as the 1886 M type. Tubal 5000 powder by Nobel Sport.

GPA by Cartouches Sologne Mle. D 12.4 g (191 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .327" - ⌀ 8.30 mm.

Monolithic type D bullets in machined brass. .348 Winchester cases converted to 8 x 51 mm R Lebel.

GPA Balle D.

Nitrochimie RS 60 powder.

Converted .348 Win case.

Boxer ⌀ 5.33 mm Large Rifle CCI 200 type primer. The total length of the cartridge will be 75.08 mm. Crimping Lee Factory Crimp or the previously mentioned "roll" by RCBS. Powder charge 98% by volumetric dosimeter and 2% remaining is by a 1/100 gram precision balance. Velocities measured by CED Millenium chronograph at the end of the bore adjusted and positioned at 3 meters from the firing position, or the V3 distance. Arm: Berthier Mle. 07-15 (MAS 1915) rifle, already mentioned. Tubal 5000 powder by Nobel Sport.

Powder	Mass	V3 Shot 1	V3 Shot 2

Tubal 5000	2.45 g	569 m/s	
Tubal 5000	2.50 g	601 m/s	
Tubal 5000	2.55 g	622 m/s	
Tubal 5000	2.60 g	641 m/s	
Tubal 5000	2.65 g	649 m/s	
Tubal 5000	2.70 g	664 m/s	
Tubal 5000	2.75 g	665 m/s	
Tubal 5000	2.80 g	692 m/s	
Tubal 5000	2.85 g	701 m/s	701 m/s
Tubal 5000	2.90 g	712 m/s	710 m/s

Observations

The charges from 2.45 g to 2.65 g of Tubal 5000 have a low deflagration potential. At the 2.75 g charge of Tubal 5000, a better pyrotechnic potential is encountered. For the 2.80 g charge of Tubal 5000, we note an accretion in deflagration potential and in recoil of the arm. With a 2.85 g charge, the Tubal 5000 powder reproduces the velocities of the 1898 balle D. The 2.90 g charge of Tubal 5000 is the maximum acceptable loading and we must have restraint from loading any further in order to respect the original ballistics!

Conclusion

Probably the more vivacious powders like the Nobel Sport Tubal 3000, Nitrochimie RS 50, Vihtavuory N 140 will be more appropriate than the slower powders like the Nobel Sport Tubal 5000, Vihtavuory N 150 for this monolithic 12.40 gram bullet, especially with short barrels of the Mle. 1890 or 1892 Berthier musketoon.

GPA by Cartouches Sologne Mle. D 12.4 g (191 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .327” - ⌀ 8.30 mm.

GPA balle D.

Vihtavuory N 150 powder.

Partizan case.

D type monolithic projectiles in machined brass. Partizan case. Vihtavuory N 150 powder.

Powder	**Mass**	**V3 Shot 1**
Vihtavuory N 150	2.50 g	614 m/s
Vihtavuory N 150	2.60 g	626 m/s
Vihtavuory N 150	2.65 g	643 m/s
Vihtavuory N 150	2.70 g	664 m/s

Observations

These four loadings do not have the potential of the desired deflagration regime. The desired velocities have not been attained.

Conclusion

It may be necessary to deepen experimentation in augmenting the powder charge.

GPA by Cartouches Sologne Mle. D 12.4 g (191 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .327” - ⌀ 8.30 mm

GPA balle D.

Vihtavuory N 150 powder.

Bertram case.

Monolithic D type projectiles in machined brass. Australian Bertram (kangaroo) case. Vihtavuory N 150 powder.

Powder	Mass	V3 Shot 1	V3 Shot 2
Vihtavuory N 150	2.55 g	641 m/s	
Vihtavuory N 150	2.60 g	638 m/s	
Vihtavuory N 150	2.65 g	661 m/s	
Vihtavuory N 150	2.70 g	680 m/s	
Vihtavuory N 150	2.75 g	678 m/s	671 m/s
Vihtavuory N 150	2.80 g	695 m/s	691 m/s
Vihtavuory N 150	2.85 g	711 m/s	716 m/s

Observations

The 2.55 g to 2.65 g charges of N 150 do not attain the desired deflagration regime. At the 2.70 g charge of N 150, the velocity is augmented and the deflagration regime is improved. At the 2.75 g charge of N 150, the deflagration regime is improved but not the velocity. With a charge of 2.80 g of N 150, the velocities improve again so that we can also say the velocities of the balle D have been attained. With the 2.85 g charge of N 150, the maximum is attained, permitting duplication of the trajectory fixed in that period. With an identical charge, between the Partizan and Bertram cases, the amazing differences in velocities are quite noticeable. This is probably due to the internal volume of the cases and their profile.

Conclusion

With the 2.85 g charge of N 150, the maximum is attained, we are forbidden to increase on this charge, in order to remain in the fixed trajectories of the era and to not render the arm unusable.

GPA by Cartouches Sologne Mle. D 12.4 g (191 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .327“ - ⌀ 8.30 mm.

GPA balle D.

Vihthvuory N 140 powder.

Partizan case.

D type monolithic projectiles in machined brass. Partizan case. Vihtavuory N 140 powder.

Powder	Mass	V3 Shot 1	V3 Shot 2	V3 Shot 3	V3 Shot 4	V3 Shot 5
Vihtavuory N 140	2.40 g	583 m/s				
Vihtavuory N 140	2.50 g	611 m/s				
Vihtavuory N 140	2.60 g	630 m/s				
Vihtavuory N 140	2.70 g	664 m/s				
Vihtavuory N 140	2.75 g	699 m/s				
Vihtavuory N 140 (RCBS “roll” crimp)	2.80 g	702 m/s				
Vihtavuory N 140 (LEE	2.80 g	695 m/s	695 m/s	691 m/s	698 m/s	692 m/s

Factory Crimp)						
Vihtavuory N 140	2.85 g	715 m/s				

Observations

With the 2.40 g to 2.70 g charges of N 140, the velocities attained are weak. At the 2.75 g charge of N 140, the potential of the deflagration regime is attained along with the velocity. The 2.80 g charge of N 140 with a conventional RCBS “roll” crimp duplicates the velocity of the balle D; while with the same charge and the LEE *Factory Crimp*, the velocities are lower than those with the RCBS crimp. With the 2.85 g charge of N 140 with an RCBS “roll” crimp, the maximum velocity of 715 m/s is encountered, it is therefore not useful to look for higher charges with this powder.

Conclusion

This is supplementary evidence that variations in loads as well as crimps are important and influential!

GPA by Cartouches Sologne Mle. D 12.4 g (191 grains). Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .327” - ⌀ 8.30 mm.

GPA Balle D.

Nitrochimie RS 50 powder.

Bertram case.

Monolithic D type projectiles in machined brass. Australian Bertram (kangaroo) case. Nitrochimie RS 50 powder.

Powder	**Mass**	**V3 Shot 1**	**V3 Shot 2**
Nitrochimie RS 50	2.40 g	569 m/s	
Nitrochimie RS 50	2.50 g	578 m/s	
Nitrochimie RS 50	2.60 g	627 m/s	
Nitrochimie RS 50	2.70 g	645 m/s	
Nitrochimie RS 50	2.75 g	664 m/s	
Nitrochimie RS 50	2.80 g	673 m/s	
Nitrochimie RS 50	2.85 g	692 m/s	
Nitrochimie RS 50	2.90 g	693 m/s	704 m/s
Nitrochimie RS 50	2.95 g	713 m/s	713 m/s

Observations

With the 2.40 g to 2.70 g charges of RS 50, the potential of the deflagration regime has not attained its maximum. With the 2.75 g to 2.80 g charges of RS 50, the loadings are acceptable for fire at short ranges. With a charge of 2.85 g of RS 50, the loading is acceptable because it gives good pyrotechnic results. At the 2.90 g charge of RS 50, the duplication of period velocities is realized. At the maximum charge of 2.95 g of RS 50, the full pyrotechnic potential is attained. It is not useful and dangerous to charge above this limit.

Conclusion

A supplementary combination of loading for reproduction of the ballistics of the balle D.

GPA by Cartouches Sologne Mle. D 12.4 g (191 grain) bullets. Bi-ogival pointed (or FMJBT – Full Metal Jacket Boat Tail) ⌀ .327” - ⌀ 8.30 mm.

GPA balle D.

Tubal 3000 powder.

Converted .348 Win case.

D-type monolithic projectiles in machined brass. .348 Winchester cases converted to 8 x 51 mm R Lebel. Tubal 3000 powder.

Powder	**Mass**	**V3 Shot 1**	**V3 Shot 2**
Tubal 3000	2.60 g	712 m/s	710 m/s

Observations

With the 2.60 g charge of Tubal 3000, the full potential of the deflagration regime is attained, but it is also a charge considered maximal and is not to be surpassed.

Conclusion

Loadings with Tubal 3000 powder with lower charges than 2.60 g lend themselves particularly well for for arms with short barrels of 453 mm in length, of the Berthier carbine and musketoon line.

Velocities of projectiles in short arms

Velocity trials for short arms were performed with an Mle. 1886-93 R 35 musketoon, made at Tulle in 1939, with a 0.455 m barrel proofed at MAC. These velocities (V3) were all contained between 578 and 672 m/s.

The particular case of arms rechambered for balle N

For reloading cartridges destined to be shot in an arm originally intended for the “D” type bullet of 1898, we will use the most commonly encountered reloading die tool sets in France: RCBS, Lyman, Lee, CH-Tool/4D, etc., to SAAMI (US) standards, but also compatible with the standards set by the CIP at the H1/H2 level, that is a bullet with a diameter of .320”, or 8.15 mm. Use a resizer tool in partial or full resize like with all other conventional calibers.

For a barrel whose chamber is originally intended for the “D” type bullet of 1898, but in which the H1 / H2 CIP was reamed to the profile of the Mle. 1932 N cartridge, to accept a larger diameter neck, the obligation of this “enlargement” is fulfilled by a supplementary resizing pass of the case neck of the .32 S&W caliber without going so far as to flare it. Thereafter the caliber of the neck will be enlarged and can accept PPU and 32 N bullets whose diameters are on the order of .326”, or 8.28 mm / .327” - 8.30 mm with the H1 / H2 CIP neck. Why this complimentary operation?

- Facilitates passage with less stress between the bullet and the inside of the neck, therefore less risk of pleating for the latter;
- After firing, the neck swells with much less stress, without ruptures or longitudinal fissures appearing on the H1 / H2 CIP level, which if it was in the opposite situation the case would be out of usage and it would be limited to one shot;

Similarly, before the first shot with .348 Winchester cases converted to 8 x 51 mm R Lebel, annealing the edge of the H1 / H2 on a flame for around 12 seconds, just enough to anneal the brass, will render it more supple and less brittle after being exposed to the pressure generated by the firing of the shot. A cartridge loaded with a GPS bullet in a chamber reamed for the 32 N behaves in a normal manner since the brass neck becomes more supple after annealing and resists stress and no fissures appear.

These trials in loading were done with the greatest care, from selected elements and with arms in perfect condition.

The results are given as an indication and cannot be engaged with as the author's responsibility.

Shooting results

Several 8 mm Lebel arms were tested with reloaded cartridges with Bertram cases, a 2.90 g charge of Nitrochimie RS 850 powder and GPA bullets:

- Mle. 1886-93 rifle;
- Berthier mle. 1890 carbine;
- Berthier mle. 07-15 rifle;
- Remington Rolling Block 1915 rifle;
- Lebel Mle. 1886-93 R 35 musketoon.

Shooting was done in five shot series, in a position assisted by a support, in clear weather, without wind and with an external temperature of 10 degrees C, on a C 50 target (53 cm x 53 cm, with 20 cm visual) located at 100 m. The sights of the arms are not absolutely adapted for precision fire; combat rear sight set for fire at 200 m or more, front sight too large. So it was necessary to correct the sights, but we ran out of time to refine the results. These last are quite average, but we were not in a competition and the goal of operation solely consisted of testing the compatibility of the arm and munition.

With the Lebel rifle, we obtained a 13 x 15 cm grouping, pretty much centered (after correction).

With the 07-15 rifle, we can state that the arm fires too low, the group is 13 x 11 cm.

With the Remington Rolling Block rifle, the group is 18 x 12 cm, offset towards the top, even after correction.

The Lebel Mle. 1886-93 R 35 musketoon permits obtention of a 13 x 12 cm group, offset towards the bottom.

The authors would sincerely like to thank Pierre Colline, experimental ballistician, who wanted to perform the loading trials with the elements that we communicated to him. We can also of course not forget

- Mr. Patrice Renaudot, director of the Banc d'epreuve de Saint-Etienne who revived the CIP homologation of the 8 x 51 R Lebel cartridge and made a pressure test barrel in this caliber;
- Mr. Thibault Vuillemey, director of the Cartouches Sologne society, who accepted and responded favorably to our suggestion to industrialize the balle D in machined brass and placed in our access the first machined ogives.

Photos

The pressure test barrel at the Banc d'epreuves (Copyright Jean Huon).

The arms that were used in our trials (Copyright Jean Huon):

- *Mle. 1886-93 Lebel rifle;*
- *Mle. 1890 carbine;*
- *Mle. 07-15 rifle;*
- *Remington Rolling Block rifle;*
- *Lebel Mle. 1886-93 R 35 musketoon.*

Shooting trials (Copyright Jean Huon).

Experimental target at 100 m with the Lebel rifle (Copyright Jean Huon).

Experimental target at 100 m with the 07-15 rifle.

Experimental target at 100 m with the Remington rifle (Copyright Jean Huon).

Experimental target at 100 m with the Lebel R 35 musketoon (Copyright Jean Huon).

ACKNOWLEDGEMENTS

Mr. Luc CAVALETTI

Mr. Pierre COLLINE

The late Mr. Bruno DECORSAIRE, old director of the MAS arms museum

Mr. Charles-Henri DUNOYER de NOIRMONT, comptroller general of the armed forces

Mr. Yves ETIEVANT

Mr. Philippe GEORGES

Mr. Serge HAUTEVILLE

Mr. and Mrs. Pierre LAURENT

Mr. Pascal LACOUR

Mr. Olivier LACREUSE (Etablissements PLUBEAU)

Mr. Amand LEVEAU

The late Mr. Rene MALFATTI

Mr. Philippe MENTION

Mr. Jean-Christophe PIOTTE, assistant to the director of the laboratory at the banc d'epreuves de Saint-Etienne

Mr. Philippe REGENSTREIF

Mr. Patrice RENAUDOT, director of the banc d'epreuves de Saint-Etienne

Mr. Stephane RIVOIRE

The late Mr. Herbert WOODEND, old curator of the Pattern Room of the Royal Armouries

The Centre d'Archives de l'Armement at Chatellerault

The Musee de l'Infanterie

The Section Technique de l'Armee de Terre

The Manufacture Nationale d'Armes de Saint-Etienne

BIBLIOGRAPHY

LA POUDRE SANS FUMEE ET SES CONSEQUENCES TACTIQUES, Colonel B...-Furne and Jouvet (1890).

FABRICATION DES ARMES PORTATIVES, Captain SORBETS – E.N.T. (1893).

NOTICE SUR LES MUNITIONS – E.N.T. (1893).

REPARATIONS SUR LES ARMES EN SERVICE DANS LES CORPS, Captain SORBETS – E.N.T. (1893).

CONFERENCE SUR LES MUNITIONS, Captain HENRIOT – E.N.T. (1893).

BALISTIQUE EXTERIEURE EXPERIMENTALE, Captain TAFFIN – E.N.T. (1893).

ORGANISATION ET TIR DES ARMES A FEU PORTATIVES, Captain SOUCHIER – E.N.T. (1893).

CONFERENCES DE L'ECOLE NORMALE DE TIR (1893).

LES ARMES A FEU PORTATIVES DES ARMEES ACTUELLES ET LEURS MUNITIONS, BAUDOIN (1894).

LE FUSIL LEBEL ET LA CARABINE DE CAVELERIE MODELE 1890 – Societe Francaise des Munitions (1894).

COMPTES RENDUS SOMMAIRES DES PRINCIPALES EXPERIENCES D'ARTILLERIE EXECUTES PAR LA MARINE EN 1894.

NOTICE SUR LE FUSIL A REPETITION SYSTEME DAUDETAU – Forges et Acieries de la Marine et des Chemins de Fer (1896).

COURS D'ARMEMENT, Captain BURON – E.N.T. (1896).

FUSIL A REPETITION SYSTEME DAUDETAU, Imprimerie Typographique et Glypotographique Silvestrre & Cie (1896).

ARMES PORTATIVES FRANCAISES ET ETRANGERES, Captain BATAILLE – Charles Lavauzelles (1898).

REPETIER UND AUTOMATISCHER HANDFEUER WAFFEN DER SYSTEME FERDINAND RITTER VON MANNLICHER, K.E. VON KROMAR – Vienna (1900).

HISTOIRE DE LA MANUFACTURE D'ARMES DE SAINT-ETIENNE, DUBESSY - (1900).

CATALOGUE DE LA SOCIETE FRANCAISE DES MUNITIONS DE CHASSE, DE TIR ET DE GUERRE (1900).

ARMES A FEU PORTATIVES DE GUERRE AVEC HISTORIQUE DE LEUR PROGRES PENDANT LE XIXe SIECLE, Captain LELEU (1902).

EXPERIENCES SUR LES ARMES ET LES MUNITIONS done with the H. MENISSIER device (1902-1904).

SCIENCES ET ARTS MILITAIRES, Emile DARDART – Dunod (1904).

MONOGRAPHIE DE L'ARME A FEU PORTATIVE – M. BOTTET – Flammarion (1904).

LES ARMES A FEU PORTATIVES DES ARMEES ACTUELLES ET LEURS MUNITIONS, Commander BORNECQUE – Chapelot (1905).

LES EXPLOSIFS MODERNES, Paul CHALON – Librairie Polytechnique Beranger (1911).

INSTRUCTIONS SUR LES ARMES ET LES MUNITIONS EN SERVICE DANS LES CORPS, Ministere de la Guerre (1884, 1891, 1894, 1905, 1913).

ETAT MILITAIRE DE TOUTES LES NATIONS DU MONDE – Berger-Levrault (1914).

COURS DES MUNITIONS DE L'INFANTERIE, Captain Pieuchot & Captain DUPARANT – Commission d'experiences de l'infanterie et des chars du Camp de Chalons (1932).

HISTOIRE TECHNIQUE DE L'ARTILLERIE DE TERRE EN FRANCE, J. CHALLEAT – Lavauzelle (1933).

FRENCH MILITARY WEAPONS, E. HICKS – Flayderman (1938).

INSTRUCTION SUR L'ARMEMENT ET LE MATERIEL DE TIR – Ministere de la Guerre (1940).

SAINT-ETIENNE CAPITALE DE L'ARME , E. PREYNAT.

LES FUSILS FRANCAIS ET ETRANGERS, Captain PICHENE – Lavauzelle (1955).

MANUEL DU GRADE – Ministere de la Defense (1956).

L'ARME EN FRANCE, P. RONIN – Dumas (1957).

CATALOGUE DES ARMES LEGERES ET AFFUTS EN SERVICE DANS L'ARMEE - MAT 1180 (1958).

SMALL ARMS OF THE WORLD – SMITH & SMITH – Stackpole Books (1969).

SIR CHARLES ROSS AND HIS RIFLE, Roger Phillips & Jerome Knap, Museum Restoration Service (1969).

ARMES A FEU FRANCAISES MODELES REGLEMENTAIRES 1858-1918, J. BOUDRIOT, P. LORAIN AND R. MARQUISET (1970).

LES ARMES AMERICAINES DE LA DEFENSE NATIONALE, P. LORAIN (1970).

ARMES A FEU FRANCAISES MODELES REGLEMENTAIRES – Armement d'essai 1759-1917, J. BOUDRIOT, P. LORAIN AND R. MARQUISET (1972).

ARMES A FEU DE L'ARMEE FRANCAISE 1860-1940, J. MARTIN – Crepin-Leblond (1974).

UN SIECLE D'ARMEMENT MONDIAL [Book 3], J. HUON – Crepin-Leblond (1979).

LA GENDARMERIE NATIONALE, General BESSON and P. ROSIERE – Xavier Richer (1982).

LES MATERIELS DE L'ARMEE DE TERRE FRANCAISE 1940, S. FERRARD – Lavauzelle (1982).

PLAQUETTE SUR L'HISTOIRE DE LA MANUFACTURE NATIONALE D'ARMES DE ST ETIENNE ET SON MUSEE, D. PLOTON – MAS.

LA MANUFACTURE NATIONALE D'ARMES DE CHATELLERAULT, C. LOMBARD – Brissaud (1987).

DU LEFAUCHEUX AU FAMAS, J. HUON & J.-C. SCHLINGER – Barnett (1994).

LA GRANDE AVENTURE DES FUSILS REGLEMENTAIRES FRANCAIS, H. VUILLEMIN – L.C.V. Service (1997).

LE QUI EST QUI DE L'ARME EN FRANCE (de 1350 a 1970), Jean-Jacque Buigne and Pierre Charlier – Editions du Portail (2001).

LE MAS 49 ET LES FUSILS SEMI-AUTOMATIQUES FRANCAIS DE 1894 A 1979, J. Huon – Aditha (2001) & Crepin-Leblond (2003).

LES ARMES FRANCAISES EN 1914-1918, Jean HUON – Crepin-Leblond (2005).

LES CARTOUCHES POUR FUSILS ET MITRAILLEUSES, Jean HUON – Crepin-Leblond (2006).

L'HISTOIRE DES ARMES DE LA GENDARMERIE, Jean HUON & Jean-Claude SCHLINGER – Crepin-Leblond (2006).

LE GUIDE PRATIQUE DES ARMES FRANCAISES, Jean HUON & Jean-Claude SCHLINGER – Crepin-Leblond (2006).

LES ARMES FRANCAISES EN INDOCHINE, Jean HUON – Crepin-Leblond (2008).

LES ARMES FRANCAISES EN ALGERIE, Jean HUON – Crepin-Leblond (2009).

ENCYCLOPEDIE DE L'ARMEMENT MONDIAL (Book 4), Jean HUON, Editions Grancher (2013).

LES ARMES DES POLICES FRANCAISES, Jean HUON – Crepin-Leblond (2014).

14-18 – LA GUERRE TOTALE, Jean HUON – Crepin-Leblond (2014).

L'HISTOIRE DE LA BAIONNETTE FRANCAISE, Bernard AUBRY – Editions du Brevail (2014).

LE FUSIL LEBEL, Jean HUON and Alain BARRELLIER – Crepin-Leblond (2015).

UNIFORMES ET TRADITIONS DU CORPS DES DOUANES EN 1914-1918, Christophe MULE – Editions du Plateau (2015).

Documents from the Centre d'Archives de l'Armement at Chatellerault.

Reviews and periodicals:

- *Revue d'Artillerie.*
- *Le Miroir.*
- *La Guerre du Droit.*
- *Match,*
- *Indochine Sud-Est Asiatique.*
- *Le Tromblon.*
- *Bulletins des Arquebusiers de France.*
- *Historama.*
- *Cibles.*
- *Armes et Uniformes de l'Histoire.*
- *Gazette des Armes.*
- *Gazette des Uniformes.*
- *AMI.*
- *Militaria.*
- *Armes & Tir.*
- *Calibres.*
- *Bulletins de l'ECRA et de l'AFERHM.*
- *Bulletins de l'A.F.C.B.*
- *Bulletins de l'I.B.A.*

BY THE SAME AUTHORS

Jean HUON and Alain BARRELLIER have published:

LES MITRAILLEUSES FRANCAISES, Editions Crepin-Leblond – 2014.
LE FUSIL LEBEL, Editions Crepin-Leblond – 2015.
LES CARABINES, MOUSQUETONS ET FUSILS BERTHIER, Editions Crepin-Leblond – 2016.

Jean HUON has published:
TOUT SAVOIR SUR LES PISTOLETS COLT, Sofarme – 1979.
TOUT SAVOIR SUR LE PISTOLET P 38, Sofarme – 1979.
TOUT SAVOIR SUR LE GARAND M 1, Sofarme – 1980.
UN SIECLE D'ARMEMENT MONDIAL (in 4 volumes), Editions Crepin-Leblond – 1976 – 1981.
LE M 16, Editions Crepin Leblond – 1983 – 2002.
LA CARABINE U.S. M 1, Editions Crepin-Leblond – 1984 – 1992 – 2004.
LES CARTOUCHES FRANCAISES DE 7.5 MM, Multi-Arms – 1985.

MILITARY RIFLE & MACHINE GUN CARTRIDGES, Ironside International Publishers – 1988.
LES ARMES ALLEMANDES, Cepadues – 1993.
MILITARY HANDGUNS OF FRANCE 1858-1950, Excalibur Publications – 1993.
DU LEFAUCHEUX AU FAMAS, Barnett Editions – 1994.
LISTE DES CARTOUCHES PAR CATEGORIES, Barnett Editions – 1994 – 1995.
LES PISTOLETS AUTOMATIQUES FRANCAIS 1890-1990, Sofarme – 1980; Histoire & Collections – 1995.
FRENCH AUTOLOADING RIFLES 1898-1979, Collector Grade Publication – 1995.
LE COLT .45, Regi'Arm - 1999.
CLAIREFONTAINE ET SON HISTOIRE, Les Amis de Clairefontaine – 2000.
LES CARTOUCHES POUR PISTOLETS ET REVOLVERS, Barnett Editions – 1996; Aditha – 2001.
LES REVOLVERS SMITH & WESSON NO. 1, 2 ET , Regi'Arm - 2001.
LES ARMES DE POING DE L'ARMEE FRANCAISE 1858-1998, Barnett Editions – 2001.
LES PISTOLETS MITRAILLEURS THOMPSON, Barnett Editions – 1995; Aditha – 2001; Editions Crepin-Leblond, 2002.
LE MAUSER 98, Barnett Editions – 1997; Aditha – 2001; Editions Crepin-Leblond – 2003.
LES FUSILS D'ASSAUT FRANCAIS, Barnett Editions – 1998; Editions Crepin-Leblond – 2003.
LES ARMES ALLEMANDES DU JOUR-J, Editions Crepin-Leblond – 2003.
LES ARMES AMERICAINES DU JOUR-J, Editions Crepin-Leblond – 2003.
LES ARMES BRITANNIQUES ET CANADIENNES DU JOUR-J, Editions Crepin-Leblond – 2003.
LE GARAND M 1 – Regi'Arm – 2004.
FRENCH SERVICE HANDGUNS 1858-2004, Tommy Gun Publication – 2004.
CONNAISSANCES ET REGLEMENTATION DES ARMES, Editions Crepin-Leblond – 2004.
LES ARMES DE POING DE L'ARMEE FRANCAISE 1858-2004, Editions Crepin-Leblond – 2005.
LES ARMES ALLEMANDES EN 1914-1918, Editions Crepin-Leblond – 2005.
LES ARMES BRITANNIQUES EN 1914-1918, Editions Crepin-Leblond – 2005.
LES ARMES FRANCAISES EN 1914-1918, Editions Crepin-Leblond – 2005.
LES ARMES AMERICAINES EN 1917-1918, Editions Crepin-Leblond – 2005.
LES CARTOUCHES POUR FUSILS ET MITRAILLEUSES, Amphora – 1986; Editions Crepin-Leblond, 2006.
LES FUSILS FRANCAIS A VERROU, Editions Crepin-Leblond – 2006.
LES PISTOLETS BROWNING, Regi'Arm - 2006.
LE GUIDE PRATIQUE DES ARMES ALLEMANDES, Editions Crepin-Leblond – 2006.
LA DUCHESSE D'UZES ET LA CHASSE A COURRE, Editions Crepin-Leblond – 2006.
LES ARMES FRANCAISES EN 1939-1940, Editions Crepin-Leblond – 2006.
LES ARMES ITALIENNES EN 1940-1945, Editions Crepin-Leblond – 2006.
LES ARMES SOVIETIQUES EN 1941-1945, Editions Crepin-Leblond – 2006.
LES ARMES JAPONAISES EN 1941-1945, Editions Crepin-Leblond – 2006.
LE GUIDE PRATIQUE DES ARMES FRANCAISES, Editions Crepin-Leblond 2006.
LA MITRAILLETTE STEN, Editions Crepin-Leblond – 2006.
LES FUSILS LEE-ENFIELD, Editions Crepin-Leblond – 2006.
L'HISTOIRE DES ARMES DE LA GENDARMERIE, Editions Crepin-Leblond 2006.
LE FUSIL-MITRAILLEUR MODELE 1924 M 29, Editions Crepin-Leblond – 2007.
LES PISTOLETS MITRAILLEURS FRANCAISE, Editions Crepin-Leblond – 2007.
LES ARMES FRANCAISES EN 1870-1871, Editions Crepin-Leblond – 2007.
LES ARMES ALLEMANDES EN 1870-1871, Editions Crepin-Leblond – 2007.
LES ARMES AMERICAINES AU VIET-NAM, Editions Crepin-Leblond – 2007.
LES ARMES FRANCAISES EN INDOCHINE (VOL. 1 AND 2), Editions Crepin-Leblond – 2008.
LES ARMES DE LA GUERRE CIVILE ESPAGNOLE 1936-1939, Editions Crepin-Leblond – 2008.
LES CARTOUCHES FRANCAISES DE 5,56 MM, FRENCH 5,56 MM CARTRIDGES, 2008.
HISTOIRE DES PISTOLETS MAUSER, Editions Crepin-Leblond & Verlag-Stocker-Schmidt (2009).
LES ARMES AMERICAINES EN IRAK, Editions Crepin-Leblond – 2010.
LES ARMES FRANCAISES EN AFGHANISTAN, Editions Crepin-Leblond – 2010.
LES ARMES FRANCAISES EN ALGERIE, Editions Crepin-Leblond – 2010.

LES ARMES FRANCAISES DE LA RESISTANCE, Editions Crepin-Leblond – 2010.
LE FAMAS ET SON HISTOIRE, Editions Crepin-Leblond – 2010.
LE KALASHNIKOV ET SON HISTOIRE, Editions ETAI – 2011.
LES AVIONS ALLIES 1939-1945, Editions Crepin-Leblond – 2012.
LES AVIONS DE L'AXE 1939-1945, Editions Crepin-Leblond – 2012.
LES VEHICULES ALLEMANDS 1939-1945, Editions Crepin-Leblond – 2012.
LES VEHICULES AMERICAINS 1941-1945, Editions Crepin-Leblond – 2012.
LES ARMES DES POLICES FRANCAISES (VOL. 1 AND 2), Editions Crepin-Leblond – 2013.
LES ARMES LEGERES ANTICHARS, Editions Crepin-Leblond – 2014.
LES ARMES LEGERES ANTI-AERIENNES, Editions Crepin-Leblond – 2014.
LES ARMES DES REBELLES, Editions Crepin-Leblond – 2014.
LES ARMES DES POLICES FRANCAISES, Editions Crepin-Leblond – 2014.
LES PISTOLETS SIGNALEURS, Editions Crepin-Leblond – 2014.
14-18 LA GUERRE TOTALE, Editions Crepin-Leblond – 2014.
ENCYCLOPEDIE DE L'ARMEMENT MONDIAL (in 7 volumes), Editions Grancher – 2011-2015.
LES FUSILS DE SNIPERS, Editions Crepin-Leblond – 2016.
LES GUERRES D'INDOCHINE ET DU VIET-NAM – Work in progress.
L'ARMEMENT DES AERONEFS – Work in progress.

Jean HUON and Alain BARRELLIER are also the authors of three background works on:

LES MITRAILLEUSES FRANCAISES

The first machine guns appeared in France on the eve of the Franco-Prussian War. Poorly utilized during the conflict, they were the object of many subsequent developments which were implemented at the start of the 20th century by a timid and limited adoption of a very well performing device developed by the Hotchkiss society. At the same time, we develop in the state arsenals the Puteaux and Saint-Etienne machine guns. All the excitement of the development of these models, their description, their characteristics are featured in this work. It is completed by the study of all the machine guns thus utilized.

296 pages, more than 660 illustrations. By the same editor.

LE FUSIL LEBEL

The Lebel rifle is the arm which equipped several generations of French soldiers for more than a half-century. It symbolizes the spirit of revenge which animated France at the end of the 19th century and in the 1900s. It was the companion of our grandfathers and great grandfathers during the First World War. You will discover its history, then its manufacture, its modifications, its service and its usage: then we can study its accessories. After you have read this book, you will never look at the Lebel rifle in the same manner.

344 pages, more than 600 illustrations. By the same editor.

LES CARABINES, MOUSQUETONS ET FUSILS BERTHIER

The Lebel rifle was adopted in the rush of 1886 and put in manufacture on a grand scale the next year. This was an exceptional arm on the ballistic field, but was accompanied by a feed system that was already obsolete the moment of its adoption. This is the reason which, after only a short time when a short arm for the cavalry was chosen, we chose a simpler and more modern model, conceived by a civil engineer: Mr. Emile Berthier. The circumstances brought the military authority to use the same mechanism to create

other models, before, during, and after the First World War. These are the arms which we invite you to discover; as well as the other models developed by Emile Berthier and Louis Daudetau.

320 pages, more than 440 illustrations. By the same editor.

This work was printed by the presses of the IMPRIMERIE DE CHAMPAGNE – Langres (FR). Printed in the EU – 3rd quarter 2016.
To contact Editions Crepin-Leblond

14 rue du Patronage-Laique – 52902 CHAUMONT CEDEX

Telephone: 03 25 03 87 48 – FAX: 03 25 03 87 40

We have in several recent works recounted the history, genesis, and described the manufacture and usage of the French regulation 8 mm arms. After compiling this information, we must also talk about their ammunition. We know with which eagerness and haste General Boulanger adopted a new 8 mm caliber repeating rifle. At the same time, a smokeless powder was created and we were already interested in a reduction in caliber. The new rifle had more than three million examples manufactured over several years and it equipped the active army and a large section of the reserves. It also gives excellent ballistic performance, which are augmented by the adoption of the balle D in 1898. From its placement in service, the 8 mm Lebel cartridge is made on a grand scale and despite several defects of its youth it is satisfactory, so much so it is produced in France for the needs of the army and the administration until the start of the 1950s. It also gives rise to numerous adopted variants and also those remaining in the prototype stage and which today serve as researchers' delight. With the classification of 8 mm arms in C or D category, the 8 mm Lebel interests shooters of regulation arms. The cartridge is still produced in Serbia and we now find in the commercial market reloadable cases in this caliber. As an aside, certain French factories have not hesitated to restart manufacture of the balle D or similar cartridges. These are all historic or contemporary munitions which we invite you to discover in this work.

978-2-70-300414-1

www.crepin-leblond.fr

Price

24.90 Euro